REMARKS

In this Amendment, Applicant amends the Title and claims 5, 9, and 15 in order to more appropriately define the present invention. Applicant submits that no new matter is introduced. As a result of this Amendment, claims 1-25 remain pending, with claims 13, 14, and 16-24 being withdrawn from consideration as directed to an nonelected invention.

In the Office Action, the Examiner objected to the drawings; objected to the Title; objected to claims 5, 9, and 15 because of informalities; rejected claims 1-3, 6-9, 11, 12, 15, and 25 under 35 U.S.C. § 102(b) as being anticipated by Lincklaen-Arriens et al. (U.S. Patent No. 4,090,170); rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Lincklaen-Arriens et al. in view of Dickie et al. (U.S. Patent No. 5,587,707); rejected claim 10 under Lincklaen-Arriens et al. in view of Brown et al.(U.S. Patent No. 5,627,414); and objected to claim 4 as being dependent on a rejected base claim, but indicated its allowability if rewritten in independent form including all the limitations of the base claim and intervening claims.

Objection to the Drawings

The Examiner objected to the drawings, stating: "the empty boxes in figures 1-3 should contain labels or symbols representing their purpose or function." Office Action at page 2.

In response to the Examiner's requirement, Applicant files herewith 3 sheets of drawings labeled "Replacement Sheets," containing Figs. 1-3. Applicant has amended each of these drawing figures to include the labels for the so-called "empty boxes," as required by the Examiner.

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Applicant requests that these drawings be made of official record in the above-identified patent application. If the drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned.

Objection to the Title

On page 2 of the Office Action, the Examiner objected to the Title alleging that it is not descriptive. Applicant has amended the Title to "Anode Monitoring," as suggested by the Examiner. Accordingly, Applicant deems the objection overcome and respectfully request the Examiner to withdraw the objection.

Objection to the claims

On pages 2-3 of the Office Action, the Examiner objected to claims 5, 9, and 15 because of minor informalities. Applicant has amended claim 5 to replace the phrase "claim 1 which" with "claim 1 in which," as required by the Examiner. Further, Applicant has amended claims 5 and 15 by replacing the phrase "impedance means" with "impedance element," as required by the Examiner. Applicants thus submit that the objection to claims 5, 9, and 15 have been overcome and respectfully request the Examiner to withdraw the objection.

Rejection under 35 U.S.C. § 102(b)

On pages 3-5 of the Office Action, the Examiner rejected claims 1-3, 6-9, 11, 12, 15, and 25 under 35 U.S.C. § 102(b) as being anticipated by Lincklaen-Arriens et al.

In order to properly anticipate Applicant's claimed invention under 35 U.S.C. § 102(b), the Examiner must show that each and every element of each of the claims in issue is found, either expressly described or under principles of inherency, in a single

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prior art reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. §2131, page 2100-69, 8th Ed., August 2001, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Further, "the elements must be arranged as required by the claim." M.P.E.P. §2131, p. 2100-69.

Independent claim 1 recites an anode monitoring system comprising, "a signal circuit having at least one signal path comprising the metallic structure and a selected anode whereby the characteristics of the signal circuit depend on the effectiveness of the selected anode, a signal generator for generating and applying a signal to the signal circuit, and a central station for monitoring signals on the signal circuit to thereby determine whether the selected anode is effective."

Lincklaen-Arriens et al. discloses a system for measuring the cathodic protection level at a remote point and converting the measurement to an acoustic signal that is transmitted to an observation point. Id. at col. 2, lines 49-52. More specifically, Lincklaen-Arriens et al. discloses a reference electrode 5 placed in the water which has an electrical connection with a box 6 and the box 6 also has an electrical connection with the steel component 1. The box 6 of Lincklaen-Arriens et al. contains a generator for acoustic vibrations and the generated vibrations are transmitted to a crystal 7 that is pressed against the steel component 1. Id. at col. 5, lines 10-17 and Fig. 1. Lincklaen-Arriens et al. further discloses that the vibrations propagate through the steel component 1 and are detected by a transducer 8, coupled by an electrical connection to a box 9 for demodulating the vibrations received by a recording device 10 which records the result of the measurement. Id. at col. 5, lines 20-26 and Fig. 1. However,

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Lincklaen-Arriens et al. does not disclose at least a one signal path comprising the metallic structure and a selected anode, as recited in claim 1. In fact, the anode 3 of Lincklaen-Arriens et al. does not form any part of the signal circuit at all.

Further, Lincklaen-Arriens et al. does not disclose at least "characteristics of the signal circuit depend on the effectiveness of the selected anode" and "a central station for monitoring signals on the signal circuit to thereby determine whether the selected anode is effective," as recited in claim 1. Because the signal circuit of Lincklaen-Arriens et al. does not include the anode at all, it necessarily fails to disclose at least the quoted elements of claim 1.

Therefore, Lincklaen-Arriens et al. fails to disclose at least "a signal circuit having at least one signal path comprising the metallic structure and a selected anode whereby the characteristics of the signal circuit depend on the effectiveness of the selected anode, a signal generator for generating and applying a signal to the signal circuit, and a central station for monitoring signals on the signal circuit to thereby determine whether the selected anode is effective," as recited in claim 1.

Because Lincklaen-Arriens et al. fails to disclose each and every element of claim 1, Applicant respectfully submits that the rejection of claim 1 under 35 U.S.C. § 102(b) is improper. Applicant respectfully requests the Examiner withdraw the rejection and allow claim 1. Claims 2-3, 6-9, and 11 are also allowable at least in view of their dependency from allowable claim 1.

Independent claim 12 contains recitations similar to claim 1. Specifically, claim 12 recites an anode monitoring method comprising the steps of: "generating a signal and applying said signal to a signal circuit, the signal circuit comprising at least one

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signal path comprising the metallic structure and a selected anode whereby the characteristics of the signal circuit depend on the effectiveness of the selected anode; and monitoring signals on the signal circuit at a central station to thereby determine whether the selected anode is effective." For the reasons mentioned above regarding the rejection of claim 1, Lincklaen-Arriens et al. fails to disclose at least these steps of claim 12 quoted above.

Because Lincklaen-Arriens et al. fails to disclose each and every element of claim 12, Applicant respectfully submits that the rejection of claim 12 under 35 U.S.C. § 102(b) is improper. Applicant respectfully requests the Examiner withdraw the rejection and allow claim 12.

Independent claim 15 recites an anode arrangement comprising "cathodic protection anode arranged for mounting on a metallic structure, an impedance element having one terminal connected to the anode and another terminal arranged for connection to said metallic structure, and an electronics module connected across the impedance element for at least one of transmitting and receiving signals."

In the Office Action, the Examiner alleges that Lincklaen-Arriens et al. discloses "... an impedance element (fig. 3(27)) having one terminal connected to the anode and another terminal arranged for connection to said metallic structure (fig. 3), and an electronics module (fig. 3(28)) connected across the impedance means for at least one of transmitting and receiving signals (fig. 3)."

Applicant respectfully disagrees with the Examiner's allegations because the Examiner has mischaracterized the teachings of Lincklaen-Arriens et al. Specifically, Lincklaen-Arriens et al. discloses an oscillator 24 and a pulse shaper 25 to produce a

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high-frequency acoustic vibration and these pulses act as carrier waves and are modulated in modulator 26 with a low-frequency vibration of converter 23. Id. at col. 5, lines 60-66 and Fig. 3. Lincklaen-Arriens et al. further discloses that the modulation signal goes to an oscillatory circuit 27, which contains a crystal 28 connected in parallel and the crystal 28 transfers the vibrations to a part of the metal structure or to the water. Id. at col. 5, line 66 - col. 6, line 3 and Fig. 3.

However, contrary to the Examiner's allegations, Lincklaen-Arriens et al. does not disclose at least "cathodic protection anode arranged for mounting on a metallic structure, an impedance element having one terminal connected to the anode and another terminal arranged for connection to said metallic structure, and an electronics module connected across the impedance element for at least one of transmitting and receiving signals," as recited in claim 15.

Because Lincklaen-Arriens et al. fails to disclose each and every element of claim 15, Applicant respectfully submits that the rejection of claim 15 under 35 U.S.C. § 102(b) is improper. Applicant respectfully requests the Examiner withdraw the rejection and allow claim 15.

Rejection under 35 U.S.C. § 103(a)

On pages 5-7 of the Office Action, the Examiner rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Lincklaen-Arriens et al. in view of Dickie et al. and rejected claim 10 as being unpatentable over Lincklaen-Arriens et al. in view of Brown et al. Applicant respectfully disagrees with the Examiner's arguments and conclusions, and respectfully submit that a *prima facie* case of obviousness has not been established.

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In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." *See* M.P.E.P. § 2143.03, 8th Ed., Aug. 2001, p. 2100-126, quoting *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143, pp. 2100-122 – 127.

I. Claim 5

Claim 5 depends from independent claim 1. For the reasons mentioned before regarding the rejection of claim 1 under 35 U.S.C. § 102(b), Lincklaen-Arriens et al. does not teach or suggest each and every element of claim 1. Dickie et al. fails to cure these deficiencies of Lincklaen-Arriens et al. Specifically, Dickie et al. discloses a pipeline system with means for transmitting data over distances without interfering with the cathodic protection of the pipeline. Id. at col. 1, lines 48-51. However, Dickie et al. does not teach or suggest at least "a signal circuit having at least one signal path comprising the metallic structure and a selected anode whereby the characteristics of the signal circuit depend on the effectiveness of the selected anode, a signal generator for generating and applying a signal to the signal circuit, and a central station for monitoring signals on the signal circuit to thereby determine whether the selected anode is effective," as recited in claim 1 upon which claim 5 is dependent.

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Therefore, Lincklaen-Arriens et al. and Dickiet et al., either taken alone or in combination, do not teach or suggest each and every element of claim 5. Accordingly, the rejection of claim 5 under 35 U.S.C. § 103(a) is improper.

Further, while the Examiner admits that Lincklaen-Arriens et al. does not disclose the signal circuit comprising a return path via earth and the selected anode, when effective, provides a conduction path from the metallic structure to earth, as recited in claim 5, he attempts to cure this deficiency of Lincklaen-Arriens et al. by alleging that Fig. 4 of Dickie et al. discloses such an element. Applicants respectfully disagree because, as argued above, Dickie et al. merely discloses a data transmission system on a pipeline where there are anodes and does not disclose an anode monitoring system.

Moreover, the Examiner alleges that "it would have been obvious to one skilled in the art at the time of the invention to incorporate the return path of Dickie et al. into the system of Lincklaen-Arriens et al. for the purpose of completing the circuit through the anode whereby improving detection of anode depletion." Office Action at page 6. Applicant respectfully disagrees with the Examiner's conclusions and allegations. First, as pointed out above, the signal circuit of Lincklaen-Arriens et al. does not include an anode at all, thus obviating any need to "incorporate a return path ... for the purpose of completing the circuit through the anode," as alleged by the Examiner. Second, even if the Examiner's characterization of the references were correct (which it is not), Applicant takes issue with the Examiner's further allegation that such a combination of elements would "improv[e] detection of anode depletion." Office Action at page 6. Applicant respectfully submit that the Examiner's allegation is an unsubstantiated generalized statement of questionable relevance.

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Applicant submits that "[d]eficiencies of the cited references cannot be remedied by the Board's general conclusions about what is "basic knowledge" or "common sense."" In re Lee, 61 USPQ2d 1430, 1432-1433 (Fed. Cir. 2002), quoting In re Zurko, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Should the Examiner maintain the rejection after considering the arguments presented herein, Applicant submits that the Examiner must provide "the explicit basis on which the examiner regards the matter as subject to official notice and [allow Applicant] to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made" (Id. at 3, emphasis in original), or else withdraw the rejection.

In summary, Applicant submits that Lincklaen-Arriens et al. and Dickie et al., taken alone or in combination, do not suggest the desirability of any modification to result in Applicant's claimed invention, nor do these references show that there would be any reasonable expectation of success from so doing.

Accordingly, the Examiner has not met the essential criteria for establishing a *prima facie* case of obviousness. Applicant has demonstrated above that the Examiner: (a) has not shown all recitations of Applicant's claimed invention are taught or suggested by Lincklaen-Arriens et al. and Dickie et al., taken alone or in combination; (b) has not shown any requisite motivation to modify Lincklaen-Arriens et al. or Dickie et al. to produce Applicant's claimed invention; and (c) has not shown there would be any reasonable expectation of success from modifying Lincklaen-Arriens et al. or Dickie et al. in order to produce the present claimed invention. Thus, Applicant submits that the Examiner's reliance on Lincklaen-Arriens et al. and Dickie et al. fails to establish *prima facie* obviousness.

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Therefore, Applicant submits that the rejection of claim 5 under 35 U.S.C. § 103(a) is improper, and Applicant respectfully requests the Examiner to withdraw the rejection of claim 5 under 35 U.S.C. § 103(a) and the claim be allowed.

II. Claim 10

Applicant respectfully traverses the rejection of claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Lincklaen-Arriens et al. in view of Brown et al. because the Examiner has failed to establish a *prima facie* case of obviousness.

Claim 10 depends from independent claim 1. As discussed above regarding the rejection of claim 1 under 35 U.S.C. § 102(b), Lincklaen-Arriens et al. does not teach or suggest each and every element of claim 1. Brown et al. fails to cure these deficiencies of Lincklaen-Arriens et al. Specifically, Brown et al. discloses the use of a metal reference electrode and a combination of electronic and eletro-mechanical components designed to operate with a very low electrical energy consumption. Id. at col. 3, lines 17-22. However, Brown et al. does not teach or suggest at least "a signal circuit having at least one signal path comprising the metallic structure and a selected anode whereby the characteristics of the signal circuit depend on the effectiveness of the selected anode, a signal generator for generating and applying a signal to the signal circuit, and a central station for monitoring signals on the signal circuit to thereby determine whether the selected anode is effective," as recited in claim 1 from which claim 10 depends.

Therefore, Lincklaen-Arriens et al. and Brown et al., either taken alone or in combination, do not teach or suggest each and every element of claim 10. Accordingly, the rejection of claim 10 under 35 U.S.C. § 103(a) is improper.

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Further, the Examiner alleges that "it would have been obvious to one skilled in the art at the time of the invention to incorporate the generator and variable resistance of Brown et al. into the system of Lincklaen-Arriens et al. for the purpose of controlling the voltage of the circuit whereby maintaining a proper current for cathodic protection." Applicant takes issue with the Examiner's allegations and conclusions as a generalized statement of questionable relevance. As the Applicant has demonstrated above, the present invention, as recited in claim 10, cannot be attained based merely on the combination of Lincklaen-Arriens et al. and Brown et al. One skilled in the art would only arrive at the present claimed invention by consulting Applicant's disclosure. Therefore, the only way to construct the claimed invention from the cited references would be to rely on aspects related to the present invention. Such reliance, however, would constitute improper hindsight reasoning. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01, p. 2100-124, citing *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990).

Therefore, Applicant submits that Lincklaen-Arriens et al. and Brown et al., taken alone or in combination, do not suggest the desirability of any modification to result in Applicant's claimed invention, and these references do not show that there would be any reasonable expectation of success from so doing.

Accordingly, the Examiner has not met the essential criteria for establishing a *prima facie* case of obviousness. Applicant has demonstrated above that the Examiner: (a) has not shown all recitations of Applicant's claimed invention are taught or suggested by Lincklaen-Arriens et al. and Brown et al., taken alone or in combination;

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(b) has not shown any requisite motivation to modify Lincklaen-Arriens et al. or Brown et al. to produce Applicant's claimed invention; and (c) has not shown there would be any reasonable expectation of success from modifying Lincklaen-Arriens et al. or Brown et al. in order to produce the present claimed invention. Thus, Applicant submits that the Examiner's reliance on Lincklaen-Arriens et al. and Brown et al. fails to establish *prima facie* obviousness.

Therefore, Applicant submits that the rejection of claim 10 under 35 U.S.C. § 103(a) is improper, and Applicant respectfully requests the Examiner to withdraw the rejection of claim 10 under 35 U.S.C. § 103(a) and the claim be allowed.

Conclusion

In view of the foregoing remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: September 17, 2003

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